IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	PAPALLO et al.
Serial No.:	10/662,971
Filed:	September 15, 2003
For:	CIRCUIT PROTECTION SYSTEM
Examiner:	WILLOUGHBY, Terrence Ronique
Art Unit:	2836
Confirmation No.:	1096
Customer No.:	27623

Attorney Docket: 138562

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF UNDER 35 USC §134

Dear Sir:

We are enclosing for filing in the above-identified application the following:

1. Appellant's Appeal Brief;
2. Authorization to charge firm's account in the amount of $510.00 (Appeal Brief fee $510);
3. Transmittal letter in duplicate; and
4. Postcard.

Please charge the Appeal Brief fee of $510 and any additional fees if necessary or credit any such fees, to Deposit Account No. 01-0467 in the name of Ohlandt, Greeley, Ruggiero & Perle. A duplicate copy of this Transmittal is attached for that purpose.

Respectfully submitted,

August 4, 2008
Date

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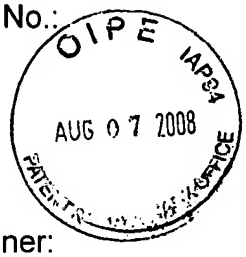
CERTIFICATE OF MAILING

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE U.S. POSTAL SERVICE AS FIRST CLASS MAIL, UNDER 37 CFR §1.8 IN AN ENVELOPE ADDRESSED TO: MAIL STOP **APPEAL BRIEF -PATENTS,** COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450, ON AUGUST 4, 2008.

LYNN C. WALLACH	Lynn C. Wallach	AUGUST 4, 2008
NAME	SIGNATURE	DATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



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P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF FILED UNDER 35 U.S.C. §134

Dear Sir:

Further to the Notice of Appeal filed on June 2, 2008, the Appeal Brief filed herewith under 35 U.S.C. §134 and 37 C.F.R. §41.37 is believed to comply with the requirements set forth in 37 C.F.R. §41.37(c).

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(1) Real Party in Interest

The real party in interest is the General Electric Company. Ownership by the General Electric Company is established by assignment document recorded for this application on January 2, 2004 on Reel 014861, Frame 0072.

(2) Related Appeals and Interferences

The undersigned attorney is not aware of any related patent applications or patents involved in any appeal or interference proceeding.

(3) Status of the Claims

Claims 3, 17, 22-31, 39, 45, 54, and 58 have been cancelled. Claims 1-2, 4-16, 18-21, 32-38, 40-44, 46-53, 55-57, and 59 are pending in this application, and are the subject of this Appeal. Claims 1, 12, 13, 32, and 46 are independent.

Independent claims 1 and 32, as well as claims 2, 4-11, 35-36, 38, and 40-43 that depend therefrom, respectively, were rejected under 35 U.S.C. §103 over U.S. Patent No. 6,411,865 to Qin et al. (Qin) in view of U.S. Patent No. 6,167,329 to Engel et al. (Engel).

Independent claims 12, 13, and 46, as well as claims 14-16, 18-21, 44, 46-53, 55-57, and 59 that depend therefrom, respectively, were rejected under 35 U.S.C. §103 over Qin and Engel in further view of U.S. Patent No. 5,875,088 to Matsko et al. (Matsko).

(4) Status of Amendments

A response after Final was filed on April 1, 2008. The response after Final did not amend or cancel any claim. An Advisory Action was mailed April 29, 2008. The Advisory Action considered the response but asserted that the response did not place the application in condition for allowance.

(5) Summary of claimed subject matter

Claims 1, 12, 13, 32, and 46 are independent. Generally, the claimed inventions are directed to methods of protecting a circuit, a protection system, and a power distribution system as described in paragraphs [0069] to [0100] of the present application and shown in Figures 4-8.

More specifically, the claimed invention as set forth in **independent claim 1** provides a method of protecting a circuit **(12, 1090, 1091)** having power switching devices **(14, 1015, 1016, 1020, 1021, 1025, 1026, 1070)**. **See page 5, lines 1-5, page 21, lines 5-19, FIG. 1, and FIG. 5.** The method defines characteristics **(Tables 1 and 2)** of a zone of protection **(1095, 1195)** of the circuit; defines a protection matrix **(Table 3)** based at least in part upon the characteristics; performs a zone protective function on the zone of protection using the protection matrix; and controls the microprocessor to perform instantaneous overcurrent protection of the switching devices based at least in part on the electrical parameters. **See page 21, line 5 through page 30, line 15 and FIGS. 4-8.** The protection matrix includes a matrix of protection coefficients **(Table 3)** used by the zone protective function. **Id.** The step of performing the zone protective function is based at least in part upon electrical parameters **(36, 38)** of the zone of protection and the electrical parameters are communicated over a data network **(32)** to a microprocessor **(28). See page 9, lines 16-21 and FIG. 1**. The microprocessor (28) performs the zone protective function. **See page 21, lines 19-21.**

The claimed invention as set forth in **independent claim 12** is directed to a method of protecting a circuit **(12, 1090, 1091)** having power switching devices **(14, 1015, 1016, 1020, 1021, 1025, 1026, 1070)**. **See page 5, lines 1-5, page 21, lines 5-19, FIG. 1, and FIG. 5.** The method includes defining characteristics **(Tables 1 and 2)** of a zone of protection **(1095, 1195)** of the circuit defining a protection matrix **(Table 3)** based at least in part upon the characteristics; performing a zone protective function on the zone of protection using the protection matrix; determining a dynamic delay time for opening the at least one of the power switching devices; opening the at least one of the power switching devices after the dynamic delay time has elapsed; and controlling the

microprocessor to perform instantaneous overcurrent protection of the switching devices based at least in part on the electrical parameters. **See page 17, line 1 through page 18, line 15 and page 21, line 5 through page 30, line 15 and FIGS. 4-8.** The step of performing the zone protective function is based at least in part upon electrical parameters (36, 38) of the zone of protection, the electrical parameters being communicated over a data network (32) to a microprocessor (28). **See page 9, lines 16-21 and FIG. 1.** The microprocessor performs the zone protective function. **See page 21, lines 19-21.**

The claimed invention as set forth in **independent claim 13** is directed to a method of protecting a circuit **(12, 1090, 1091)** having power switching devices **(14, 1015, 1016, 1020, 1021, 1025, 1026, 1070)**. **See page 5, lines 1-5, page 21, lines 5-19, FIG. 1, and FIG. 5.** The method includes defining a plurality of combinations of states **(Tables 1 and 2)** of the power switching devices disposed in a zone of protection **(1095, 1195)** of the circuit; defining characteristics of the zone of protection **(Table 3)** based at least in part upon the plurality of combinations of the states of the power switching devices disposed in the zone of protection; performing a zone protective function on the zone of protection based at least in part upon the characteristics; determining a dynamic delay time for opening the at least one of the power switching devices; opening the at least one of the power switching devices after the dynamic delay time has elapsed; and controlling the microprocessor to perform instantaneous overcurrent protection of the switching devices based at least in part on the electrical parameters. **See page 17, line 1 through page 18, line 15 and page 21, line 5 through page 30, line 15 and FIGS. 4-8.** The step of performing the zone protective function is based at least in part upon electrical parameters **(36, 38)** of the zone of protection and the electrical parameters are communicated over a data network **(32)** to a microprocessor **(28)**. **See page 9, lines 16-21 and FIG. 1.** The microprocessor **(28)** performs the zone protective function. **See page 21, lines 19-21.**

The claimed invention as set forth in **independent claim 32** is directed to a protection system **(26)** for coupling to a circuit **(12, 1090, 1091)** having power switching

devices (**14, 1015, 1016, 1020, 1021, 1025, 1026, 1070**) and a zone of protection (**1095, 1195**). **See page 5, lines 1-5, page 21, lines 5-19, FIG. 1, and FIG. 5.** The system includes a control processing unit (**26**) communicatively coupleable to the power switching devices so that the control processing unit can perform all primary power distribution functions for the circuit and so that the control processing unit can perform a zone protective function on the zone of protection based at least in part upon characteristics of the zone of protection, the characteristics being actual and possible characteristics (**Tables 1 and 2**). The control processing unit (**28**) utilizes a protection matrix (**Table 3**) to perform the zone protective function, the protection matrix being defined at least in part by the characteristics of the zone of protection, and wherein the protection matrix comprises a matrix of protection coefficients used by the zone protective function. **See page 17, line 1 through page 18, line 15 and page 21, line 5 through page 30, line 15 and FIGS. 4-8.** The system further includes a data network (**32**) in communication with the control processing unit (**28**) and communicatively coupleable to the power switching devices (**14, 1015, 1016, 1020, 1021, 1025, 1026, 1070**). **See page 9, lines 16-21 and FIGS. 1 and 5.** The claimed invention as set forth in **independent claim 46** is directed to a power distribution system (**10, 105**). **See page, 5, lines 1-5, page 21, lines 5-19, FIG. 1, and FIG. 5.** The system includes a circuit (**12, 1090, 1091**) having power switching devices (**14, 1015, 1016, 1020, 1021, 1025, 1026, 1070**) and a zone of protection (**1095, 1195**). **Id.** The system also includes a control processing unit (**28**) communicatively coupled to the power switching devices. **See page 9, lines 16-21 and FIG. 1.** The control processing unit performs all primary power distribution functions for the circuit power distribution system and performs a zone protective function on the zone of protection based at least in part upon characteristics (**Tables 1 and 2**) of the zone of protection, the characteristics being actual and possible characteristics, wherein the control processing unit determines a dynamic delay time for opening at least one of the power switching devices, and wherein the at least one of the power switching devices is opened after the dynamic delay time has elapsed. **See page 17, line 1 through page 18, line 15 and page 21, line 5 through page 30, line 15 and FIGS. 4-8.**

(6) Grounds of rejection to be reviewed on appeal

The first ground presented for review is the propriety of the final rejection of independent claims 1 and 32, as well as claims 2, 4-11, 35-36, 38, and 40-43 that depend therefrom, respectively, under 35 U.S.C. §103(a) over Qin in view of Engel.

The second ground presented for review is the propriety of the final rejection of independent claims 12, 13, and 46, as well as claims 14-16, 18-21, 44, 46-53, 55-57, and 59 that depend therefrom, respectively, under 35 U.S.C. §103(a) over Qin and Engel in view of Matsko.

(7) Arguments

(a) First Ground - Claims 1-2, 4-11, 32, 35-36, 38, and 40-43 stand or fall together

Independent claims 1, 12, and 13 each recite, in part, the step of "controlling said microprocessor to perform instantaneous overcurrent protection of the switching devices based at least in part on said electrical parameters (emphasis added)".

Thus, the claimed step controls the microprocessor to perform instantaneous overcurrent protection of more than one switching device (i.e., the switching devices).

The Office Action acknowledges that Qin fails to disclose or suggest a microprocessor that performs instantaneous overcurrent protection. As such, Qin does not disclose or suggest that the central unit 20 performs both the "zone protective function" and the "instantaneous overcurrent protection" as recited in claims 1, 12, and 13.

Rather, the Office Action asserts that Engel discloses a microprocessor that performs instantaneous overcurrent protection.

While this may be true, Appellants respectfully submit that the microprocessor of Engel only performs the instantaneous overcurrent protection for a single switching device.

More specifically, Engel discloses an electronic trip unit 10 that includes two different microprocessors 24 and 46. The microprocessor 46 utilizes the data generated by the digital samples to provide voltage based protection functions for example, under/over voltage protection for the electrical system 12, and also uses the samples for waveform capture and harmonic analysis for metering and display purposes. The second microprocessor 24 implements the overcurrent protection functions to generate a trip signal when any one of the current/time characteristics of a delayed trip protection function is exceeded. This trip signal is passed to a trip mechanism 32 which opens separable contacts 34A, B and C in the three phase conductors 14A, B and C of the electrical system 12. Thus, Engel merely discloses that microprocessor 24 passes the trip signal to a single device, namely trip mechanism 32.

Thus, even if one were to combine Qin (i.e., microprocessor that performs zone protective function for multiple devices) with Engle (i.e., microprocessor that performs instantaneous overcurrent protection for a single switching device), all of the claimed elements are not disclosed or suggested.

As such, Engle, alone or in combination with Qin, simply never discloses or suggests that a microprocessor that performs instantaneous overcurrent protection of the switching devices as claimed.

Accordingly, it is respectfully submitted that the proposed combination of Qin abd Engel do not disclose or suggest claims 1 and 32, as well as claims 2, 4-11, 35-36, 38, and 40-43 that depend therefrom, respectively. Appellants therefore respectfully

request that the Board of Appeals reverse the final rejection of claims 1-2, 4-11, 32, 35-36, 38, and 40-43.

(b) Second Ground - Claims 12-16, 18-21, 44, 46-53, 55-57, and 59 stand or fall together

Independent claims 32 and 46 each recite that the control processing unit "performs all primary power distribution functions for the circuit power distribution system and performs a zone protective function (emphasis added)".

Again, Appellants respectfully submit that, and the Office Action acknowledges that, Qin does not disclose or suggest that the central unit 20 performs both the "zone protective function" and "all primary power distribution functions" as recited in claims 32 and 46.

As discussed in detail above with respect to claims 1, 12, and 13, Engel merely discloses that microprocessor 24 passes the trip signal to a single device, namely trip mechanism 32. However, Engel simply fails to disclose or suggest that microprocessor 24 performs all primary power distribution functions for the circuit power distribution system as claimed.

Additionally, Matsko is not asserted by the Office Action, nor does Matsko disclose or suggest the claimed microprocessor that performs both the "zone protective function" and "all primary power distribution functions".

Accordingly, it is respectfully submitted that the proposed combination of Qin, Engel, and Matsko do not disclose or suggest claims 12, 13, and 46, as well as claims 14-16, 18-21, 44, 46-53, 55-57, and 59 that depend therefrom, respectively. Appellants therefore respectfully request that the Board of Appeals reverse the final rejection of claims 12-16, 18-21, 44, 46-53, 55-57, and 59.

Summary

In summary, Appellants respectfully request that the Board of Appeals reverse the final rejections of all of the pending claims, thereby enabling the present application to issue.

Respectfully submitted,

August 4, 2008

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(8) Claims Appendix

Claims 1-2, 4-16, 18-21, 32-38, 40-44, 46-53, 55-57, and 59, herein on appeal, are set forth below.

1. A method of protecting a circuit having power switching devices, the method comprising:

defining characteristics of a zone of protection of the circuit;

defining a protection matrix based at least in part upon said characteristics;

performing a zone protective function on said zone of protection using said protection matrix, wherein said protection matrix comprises a matrix of protection coefficients used by said zone protective function, wherein the step of performing said zone protective function is based at least in part upon electrical parameters of said zone of protection, said electrical parameters being communicated over a data network to a microprocessor, said microprocessor performing said zone protective function; and

controlling said microprocessor to perform instantaneous overcurrent protection of the switching devices based at least in part on said electrical parameters.

2. The method of claim 1, wherein said zone protective function is a plurality of zone protective functions, each of said plurality of zone protective functions being performed on said zone of protection based at least in part upon said protection matrix.

4. The method of claim 1, further comprising sensing said electrical parameters with a sensor, communicating signals representative of said electrical parameters to a module, and communicating said signals to said microprocessor, wherein said module, said sensor and said microprocessor are communicatively coupled over said data network.

5. The method of claim 1, further comprising:

monitoring a topology of the circuit, said topology being based at least in part upon a status for each of the power switching devices in the circuit, said status being either opened or closed;

defining said zone of protection based at least in part upon said topology; and

adjusting said zone of protection based at least in part upon changes to said topology.

6. The method of claim 1, wherein the step of defining said characteristics comprises defining a plurality of combinations of states of the power switching devices in said zone of protection, each of said states being either opened or closed.

7. The method of claim 6, wherein the step of defining said characteristics further comprises defining power flow configurations for said zone of protection based upon said plurality of combinations of said states of the power switching devices in said zone of protection.

8. The method of claim 7, further comprising:

defining a definition matrix based at least in part upon said power flow configurations; and

defining said protection matrix based at least in part upon said definition matrix.

9. The method of claim 6, further comprising:

defining a zone state matrix based upon said plurality of combinations of said states of the power switching devices in said zone of protection; and

defining said protection matrix based at least in part upon said zone state matrix.

10. The method of claim 6, further comprising opening at least one of the power switching devices in said zone of protection based upon said zone protective function.

11. The method of claim 10, wherein a microprocessor is configured to operate each of the power switching devices in the circuit.

12. A method of protecting a circuit having power switching devices, the method comprising:

defining characteristics of a zone of protection of the circuit;

defining a protection matrix based at least in part upon said characteristics;

performing a zone protective function on said zone of protection using said protection matrix;

determining a dynamic delay time for opening said at least one of the power switching devices;

opening said at least one of the power switching devices after said dynamic delay time has elapsed, wherein the step of performing said zone protective function is based at least in part upon electrical parameters of said zone of protection, said electrical parameters being communicated over a data network to a microprocessor, said microprocessor performing said zone protective function; and

controlling said microprocessor to perform instantaneous overcurrent protection of the switching devices based at least in part on said electrical parameters.

13. A method of protecting a circuit having power switching devices, the method comprising:

defining a plurality of combinations of states of the power switching devices disposed in a zone of protection of the circuit, each of said states being either opened or closed;

defining characteristics of said zone of protection based at least in part upon said plurality of combinations of said states of the power switching devices disposed in said zone of protection, said characteristics being actual and possible characteristics;

performing a zone protective function on said zone of protection based at least in part upon said characteristics;

determining a dynamic delay time for opening said at least one of the power switching devices;

opening said at least one of the power switching devices after said dynamic delay time has elapsed, wherein the step of performing said zone protective function is based at least in part upon electrical parameters of said zone of protection, said electrical parameters being communicated over a data network to a microprocessor, said microprocessor performing said zone protective function; and

controlling said microprocessor to perform instantaneous overcurrent protection of the switching devices based at least in part on said electrical parameters.

14. The method of claim 13, wherein said zone of protection is dynamic.

15. The method of claim 13, wherein the step of defining said characteristics comprises defining power flow configurations for said zone of protection based upon said plurality of combinations of said states of the power switching devices disposed in said zone of protection.

16. The method of claim 13, wherein said zone protective function is a plurality of zone protective functions, each of said plurality of zone protective functions being performed on said zone of protection based at least in part upon said characteristics of said zone of protection.

18. The method of claim 13, further comprising sensing said electrical parameters with a sensor, communicating signals representative of said electrical parameters to a module, and communicating said signals to said microprocessor, wherein said module, said sensor and said microprocessor are communicatively coupled over said data network.

19. The method of claim 13, further comprising:

monitoring a topology of the circuit, said topology being based at least in part upon a status for each of the power switching devices in said circuit, said status being either opened or closed;

defining said zone of protection based at least in part upon said topology; and

adjusting said zone of protection based at least in part upon changes to said topology.

20. The method of claim 13, further comprising opening at least one of the power switching devices in said zone of protection based at least in part upon said zone protective function.

21. The method of claim 20, wherein a microprocessor is configured to operate each of the power switching devices in said circuit.

32. A protection system for coupling to a circuit having power switching devices and a zone of protection, the system comprising:

a control processing unit being communicatively coupleable to the power switching devices so that said control processing unit can perform all primary power distribution functions for the circuit and so that said control processing unit can perform a zone protective function on said zone of protection based at least in part upon characteristics of said zone of protection, said characteristics being actual and possible characteristics,

wherein said control processing unit utilizes a protection matrix to perform said zone protective function, said protection matrix being defined at least in part by said characteristics of said zone of protection, and

wherein said protection matrix comprises a matrix of protection coefficients used by said zone protective function, further comprising a data network in communication with said control processing unit and communicatively coupleable to the power switching devices.

33. The system of claim 32, wherein said characteristics are defined at least in part by a plurality of configurations for said zone of protection, said plurality of configurations being based at least in part upon states of the power switching devices disposed in said zone of protection, each of said states being either opened or closed.

34. The system of claim 33, wherein said characteristics are based at least in part upon power flow paths for said zone of protection, said power flow paths being based upon said states of said power switching devices disposed in said zone of protection.

35. The system of claim 32, wherein said control processing unit defines said zone of protection.

36. The system of claim 35, wherein said zone of protection is dynamic.

37. The system of claim 32, wherein said control processing unit monitors a topology of the circuit, said topology being based at least in part upon a status for each of the power switching devices in the circuit, said status being either opened or closed, wherein said control processing unit defines said zone of protection based at least in part upon said topology, and wherein said control processing unit adjusts said zone of protection based at least in part upon changes to said topology.

38. The system of claim 32, wherein said zone protective function is a plurality of zone protective functions, each of said plurality of zone protective functions being performed on said zone of protection based at least in part upon said characteristics of said zone of protection.

40. The system of claim 32, wherein said control processing unit operatively controls the power switching devices.

41. The system of claim 32, wherein said control processing unit receives parameter signals representative of electrical parameters of the circuit, and wherein said control processing unit opens the power switching devices if a fault is detected in the circuit.

42. The system of claim 41, further comprising a module and a sensor, said module being in communication with the power switching devices, said sensor and said control processing unit, wherein said sensor senses said electrical parameters and communicates said parameter signals to said module, and wherein said module communicates said parameter signals to said control processing unit.

43. The system of claim 32, wherein said control processing unit opens at least one of the power switching devices in said zone of protection based at least in part upon said zone protective function.

44. The system of claim 32, wherein said control processing unit determines a dynamic delay time for opening at least one of the power switching devices, and wherein said at least one of the power switching devices is opened after said dynamic delay time has elapsed.

46. A power distribution system comprising:

a circuit having power switching devices and a zone of protection; and

a control processing unit communicatively coupled to said power switching devices, wherein said control processing unit performs all primary power distribution functions for the circuit power distribution system and performs a zone protective function on said zone of protection based at least in part upon characteristics of said zone of protection, said characteristics being actual and possible characteristics,

wherein said control processing unit determines a dynamic delay time for opening at least one of said power switching devices, and wherein said at least one of said power switching devices is opened after said dynamic delay time has elapsed,

further comprising a data network in communication with said control processing unit and said power switching devices.

47. The system of claim 46, wherein said characteristics are defined at least in part by a plurality of configurations for said zone of protection, said plurality of configurations being based at least in part upon states of said power switching devices disposed in said zone of protection, each of said states being either opened or closed.

48. The system of claim 46, wherein said characteristics are based at least in part upon power flow paths for said zone of protection, said power flow paths being based upon said states of said power switching devices disposed in said zone of protection.

49. The system of claim 46, wherein said control processing unit defines said zone of protection.

50. The system of claim 49, wherein said zone of protection is dynamic.

51. The system of claim 46, wherein said control processing unit monitors a topology of said circuit, said topology being based at least in part upon a status for each of said power switching devices in said circuit, said status being either opened or closed, wherein said control processing unit defines said zone of protection based at least in part upon said topology, and wherein said control processing unit adjusts said zone of protection based at least in part upon changes to said topology.

52. The system of claim 46, wherein said zone protective function is a plurality of zone protective functions, each of said plurality of zone protective functions being performed on said zone of protection based at least in part upon said characteristics of said zone of protection.

53. The system of claim 46, wherein said control processing unit operatively controls said power switching devices.

55. The system of claim 46, wherein said control processing unit receives parameter signals representative of electrical parameters of said circuit, and wherein said control processing unit opens said power switching devices if a fault is detected in said circuit.

56. The system of claim 55, further comprising a data sample and transmission module and a sensor, said module being in communication with said power switching devices, said sensor and said control processing unit, wherein said sensor senses said electrical parameters and communicates said parameter signals to said module, and wherein said module communicates said parameter signals to said control processing unit.

57. The system of claim 46, wherein said control processing unit opens at least one of said power switching devices based upon said zone protective function.

59. The system of claim 46, wherein said control processing unit utilizes a protection matrix to perform said zone protective function, said protection matrix being defined at least in part by said characteristics of said zone of protection.

(9) Evidence Appendix

None.

(10) Related Proceedings Appendix

None.